

# Accepted Manuscript

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PII: S0958-9465(17)30092-6

DOI: [10.1016/j.cemconcomp.2017.01.010](https://doi.org/10.1016/j.cemconcomp.2017.01.010)

Reference: CECO 2769

To appear in: *Cement and Concrete Composites*

Received Date: 28 March 2016

Revised Date: 30 November 2016

Accepted Date: 19 January 2017

Please cite this article as: S. Al Toubat, M. Talha Junaid, M. Leblouba, D. Badran, Effectiveness of fly ash on the restrained shrinkage cracking resistance of self-compacting concrete, *Cement and Concrete Composites* (2017), doi: 10.1016/j.cemconcomp.2017.01.010.

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# EFFECTIVENESS OF FLY ASH ON THE RESTRAINED SHRINKAGE CRACKING RESISTANCE OF SELF-COMPACTING CONCRETE

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## ABSTRACT

This paper presents results from restrained shrinkage tests to assess the effectiveness of fly ash on cracking and relaxation behavior of Self Compacting Concrete (SCC). The effects of fly ash (FA) proportion, degree of restraint and curing regime are specifically addressed. The results show that curing condition and degree of restraint play a significant role on the effectiveness of FA on the cracking and relaxation behavior of SCC mixes. It was also found that addition of FA improves the cracking resistance and relaxation behavior of SCC relative to the control. The results further suggest that FA can replace cement by up to 50% for low degree of restraint, and up to 35% for high degree of restraint with significant improvement in cracking resistance, provided that appropriate moist curing is adopted. The normalized results presented may also prove to be an important tool in devising mixes best suited for onsite conditions.

**Keywords:** Self Compacting Concrete; shrinkage; cracking; degree of restraint; fly ash

## 1 INTRODUCTION

Self-compacting concrete (SCC) is defined as a concrete that does not require vibration for compaction; because of its excellent deformability that is accompanied with high resistance to segregation <sup>[1]</sup>. SCC is typically associated with low content of coarse aggregates and w/b ratio,

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